

IN THE CLAIMS

1. (Original) A method comprising the steps of:
providing a set of sequences, wherein the sequences are not aligned;
discovering a plurality of patterns common to a plurality of the sequences; and
5 determining if a candidate sequence comprises a predetermined number of the patterns.
2. (Original) The method of claim 1, wherein the patterns common to a plurality of the set
of sequences comprise test patterns, wherein the sequences in set of sequences comprise test sequences,
and wherein the step of determining if a candidate sequence comprises a predetermined number of the
10 patterns comprises the step of determining if there are candidate patterns in the candidate sequence that
match all of the predetermined number of test patterns.
3. (Original) The method of claim 1, further comprising the step of determining if each of
the plurality of patterns is statistically significant.
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4. (Previously Presented) The method of claim 1, wherein the step of discovering is
performed without using any knowledge about properties or features of sequences in the set of
unaligned sequences.
- 20 5. (Previously Presented) The method of claim 1, further comprising the steps of:
if the candidate sequence comprises the predetermined number of patterns, adding the
candidate sequence to the set of sequences to create a new set of sequences; and
performing the step of discovering on the new set of sequences.
- 25 6. (Previously Presented) The method of claim 1, wherein each sequence comprises a series
of symbols and wherein each pattern comprises a plurality of positions, some of the plurality of
positions each comprise at least one expected symbol and other of the plurality of positions comprise
positions which may be occupied by any sequence character.
- 30 7. (Original) The method of claim 6, wherein, for one of the positions, the at least one
expected symbol is a plurality of expected symbols.

8. (Original) The method of claim 3, wherein the step of determining if each of the plurality of patterns is statistically significant comprises the steps of selecting one of the patterns, determining if a probability that the selected pattern occurs in a sequence meets a predetermined threshold, and continuing to select additional patterns until each pattern has been selected.

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9. (Original) The method of claim 8, wherein the step of determining if a probability that the selected pattern occurs in a sequence meets a predetermined threshold further comprises the steps of using a second-order Markov chain method to determine the probability that the selected pattern occurs in a sequence and determining a natural logarithm of the probability that the selected pattern occurs in a sequence.

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10. (Original) The method of claim 3, wherein the step of determining if each of the plurality of patterns is statistically significant further comprises the steps of removing instances of each of the patterns from the set of sequences to create a new set of sequences and performing the step of discovering on the new set of sequences.

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11. (Original) The method of claim 3, wherein the step of determining if each of the plurality of patterns is statistically significant further comprises the steps of if any of the patterns is statistically significant, selecting a statistically significant pattern, modifying a composite descriptor to include the selected pattern if the selected pattern is not already part of the composite descriptor, and continuing to select statistically significant patterns until all statistically significant patterns have been selected..

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12. (Original) The method of claim 1, wherein the step of discovering a plurality of patterns common to a plurality of the sequences comprises the steps of:

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selecting a predetermined threshold that indicates how many of the sequences should contain a pattern for the pattern to be considered common;

discovering patterns, if any, that are common to the predetermined threshold of sequences;

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if there are no patterns common to the predetermined threshold of sequences, decreasing the predetermined threshold; and

performing, until the predetermined threshold is less than a predetermined amount, the step of discovering patterns, if any, that are common to the predetermined threshold of sequences and

the step of if there are no patterns common to the predetermined threshold of sequences, decreasing the predetermined threshold.

13. (Canceled)
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21. (Canceled)
22. (Canceled)
23. (Original) A system comprising:
a memory that stores computer-readable code; and
a processor operatively coupled to said memory, said processor configured to implement
said computer-readable code, said computer-readable code configured to:
provide a set of sequences, wherein the sequences are not aligned;
discover a plurality of patterns common to a plurality of the sequences; and
determine if a candidate sequence comprises a predetermined number of the patterns.
24. (Canceled)

25. (Original) An article of manufacture comprising:
a computer readable medium having computer readable code means embodied thereon,
said computer readable program code means comprising:

5 a step to provide a set of sequences, wherein the sequences are not aligned;
a step to discover a plurality of patterns common to a plurality of the sequences; and
a step to determine if a candidate sequence comprises a predetermined number of the
patterns.

10 26. (Canceled)